DECLARATION UNDER 37 C.F.R. § 1.132 FOR
UNITED STATES PATENT APPLICATION NO. 08/688,908

Michael E. Spurlock, states as follows:

1. I am a named inventor of the above identified patent application. I have a Ph.D. in Nutritional Biochemistry. My *curriculum vitae* is attached. I have worked as a scientist in the field of growth biology for 10 years. I am currently employed by Purdue University as an Assistant Professor As a result of my education and experience, I am familiar with the chemistry, characteristics and analysis of biotechnology. In particular, I am familiar with the chemistry and technology of genetic sequencing and the affects of genes on the health and anatomy of livestock.

2. I have read and am familiar with the Office Action issued on August 18, 2000 on the above identified patent application and with the cited prior art reference United States Patent No. 5,935,810 (hereinafter "'810 Patent").

3. The Office Action held that the claims of this application were obvious over the disclosure of the '810 patent because the high degree of identity (~83%) between murine and human Ob would lead one skilled in the art to expect that: (i) either of these Ob genes would make a suitable probe for locating the bovine Ob; and, (ii) that the bovine Ob would also be at least 80% identical to the murine and human Ob.

4. A high degree of identity (homology) does not always yield sufficient information necessary to isolate a gene in another species. For example, when crossing species, one skilled in the art is not sure that primers based on existing sequences will work. As such, one skilled in the art must design degenerate primers wherein species differences show up in multiple sequence alignments. Furthermore, homology is a relative thing. While homology across a small 250 base pair fragment may approach 100%, the homology across the entire cDNA may only be 80%.

5. Intraspecies homology also presents an obscuring factor in isolating a particular gene in one species by using primers derived from a different species. Specifically, multiple genes in the target species may each have similarly high homology to the same primers based on a known gene of another species. Likewise, the degenerate primers used to improve the chances of obtaining the target gene also improve the chances of obtaining additional (non-targeted) genes or missing the target gene and obtaining only non-targeted genes. Separating and purifying highly homologous intraspecies genes is difficult with the difficulty increasing as the homology increases.

6. In my opinion, knowing the sequence of a murine or human leptin gene does not allow one skilled in the art to know or contemplate the exact sequence of a leptin gene in another species such as bovine. Rather, such knowledge of the murine and human leptin gene sequences merely provides a good starting point for determining the bovine leptin gene sequence. For example, one skilled in the art could predict from the murine or human leptin sequence that the bovine leptin sequence would have high homology overall and would likely have parts of the sequence wherein the homology was 100%. However, one skilled in the art could not predict the actual homology between these species nor where the regions of 100% homology occur within the sequences. Even assuming a homology of about 85%, each codon in the murine sequence would have a 1-in-6 chance, at random, of being different in the bovine sequence. But merely knowing the murine sequence along with the homology does not provide any guidance as to which particular nucleotides or codons differ between species. The bottom line is that you do not know the bovine leptin sequence until you have the bovine leptin sequence. Even then, you may have variations within the species because of the genetic diversity that exists within all species populations. Some of these variations may be very important relative to the functionality of the protein.

7. I further declare that all statements here made by my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that the statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

Michael E. Spurlock
(Signature)
Michael E. Spurlock
(Print or Type Name)
Jan 18, 2001
(Date)